



JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



STEVEN E. CHESTER
DIRECTOR

July 24, 2007

Mr. Greg Cochran, Director
Michigan Dioxin Initiative
Michigan Operations
The Dow Chemical Company
1790 Building Washington Street
Midland, Michigan 48674

Dear Mr. Cochran:

SUBJECT: Approval with Modifications of the Compliance Schedules for the
Tittabawassee River and Floodplain Soils and Midland Area Soils Remedial
Investigation Work Plans; The Dow Chemical Company, Michigan Operations
(Dow); MID 000 724 724

On December 1, 2006, Dow submitted revised Remedial Investigation Work Plans (RIWPs) for the Tittabawassee River and Upper Saginaw River and Floodplain Soils and for the Midland Area Soils. Pursuant to the Michigan Department of Environmental Quality's (MDEQ) letter to the U.S. Environmental Protection Agency, Region 5 (U.S. EPA), dated June 25, 2007, of which you received a copy, the MDEQ committed to augmenting, by July 20, 2007, the schedules in the December 1, 2006, revised RIWPs with more detail in a partial, but enforceable, approval prior to receiving Dow's next revisions to the RIWPs later this summer. As explained our e-mail on July 20, 2007, to Ms. Margaret Guerriero of the U.S. EPA, of which you received a copy, this schedule was delayed slightly due to the unavailability of key technical staff the week of July 16, 2007.

These revised Compliance Schedules provide structure to support the overall investigation process prior to final approval of the RIWPs and supplements the previous enforceable schedules that were approved as components of the RIWPs (e.g., Upper and Middle Tittabawassee River Sampling and Analysis Plans, sampling of Midland area soils). Approval of these revised Compliance Schedules is necessary to ensure that (1) progress continues on key components of the RIWPs while interim response activities on the Tittabawassee River are underway and (2) that key "placeholder" issues and technical comments, which have been under active discussion between Dow and the MDEQ in an ongoing series of working meetings, are addressed in a timely manner.

At the request of the MDEQ, Mr. Ben Baker of Dow provided draft revised RIWP Compliance Schedules for the Tittabawassee River and Floodplain Soils and Midland Area Soils to the MDEQ by e-mail on July 13, 2007. The MDEQ has reviewed these draft revised Compliance Schedules in consultation with U.S. EPA technical staff and discussed our intended revisions with Dow on July 23, 2007. Based upon our review and discussions, the MDEQ is approving the enclosed approved Compliance Schedules. These schedules differ from Dow's July 13, 2007, draft proposal as follows:

Tittabawassee River and Floodplain RIWP Compliance Schedule

- Dow's proposal specified estimated completion dates for the submission of draft documents. The approved schedule requires the submittal of final documents by specific dates. Dow has the ability to request extensions to these due dates pursuant to Condition I.G. of Dow's hazardous waste management facility operating license (License). As a result, the footnote regarding completion dates was removed from the schedule.
- Due dates were added for submitting overall revisions to the RIWP for the Tittabawassee River and Floodplain Soils.

It was noted that based on the title of the Compliance Schedule document and the submission of the Remedial Investigation Scope of Work for the Saginaw River and Saginaw Bay, Michigan, on July 13, 2007, it appears that Dow is proposing to change the scope of the coverage of the Tittabawassee River and Upper Saginaw River and Floodplain Soils RIWP so that the Upper Saginaw River is no longer included in the work to be done on the Tittabawassee River, but will be covered under a separate RIWP, as originally envisioned under the License. Dow must revise the RIWP for the Tittabawassee River to reflect this change. Under the enclosed Compliance Schedule, this revision is required by **September 17, 2007**.

- Specific tasks and due dates for site characterization tasks were added to the Tittabawassee River and Floodplain Soils schedule, including completion of field activities, exposure unit sampling and validation, geophysics, geochemistry, and secondary constituents of interest.
- A schedule for implementing additional interim response activities was added to supplement the "IRA/PCAP Implementation Decision Tree" dated April 30, 2007, which was approved by the MDEQ on May 3, 2007.
- The human health risk assessment (HHRA) task and time line were modified to reflect the use of an independent science advisory panel (ISAP).
- The "Probabilistic Risk Assessment for Tittabawassee River" task was modified by adding "Unless Alternate Methodology and/or Time Line are Deemed Necessary by MDEQ." This addition was made to address the potential need for an alternative methodology and/or time line to develop cleanup criteria in the event that we are unable to collaboratively resolve key HHRA issues on a time frame that allows the corrective action process to be completed in a timely manner.

A similar change was made to the "Ecological Risk Assessment" task.


Midland Area Soils RIWP Compliance Schedule

- Dow's proposal identified estimated completion dates for the submission of draft documents. The approved schedule requires the submittal of final documents by specific dates. Dow has the ability to request extensions to these due dates pursuant to Condition I.G. of the License.
- A due date was added for submitting overall revisions to the Midland Area Soils RIWP.
- The HHRA task and time line were modified to reflect the use of an ISAP.
- The "Human Health Probabilistic Risk Assessment for Midland" task was modified by adding "Unless Alternate Methodology and/or Time Line are Deemed Necessary by MDEQ." This addition was made to address the potential need for an alternative methodology and/or time line to develop cleanup criteria in the event that we are unable to collaboratively resolve key HHRA issues on a time frame that allows the corrective action process to be completed in a timely manner.
- A task was added for "unblinding" the pre-remedial investigation data, in accordance with Attachment A, Section 4, of the Sampling and Analysis Plan in Support of Bioavailability Study, Midland Area Soils, Revised November 2006, which was approved by the MDEQ on December 1, 2006. Dow must submit this data to the MDEQ in an unrestricted form after the MDEQ approval (or approval with modifications) of site-specific direct contact criteria for the city of Midland or after the MDEQ approves alternative criteria or processes.
- A task was added for conducting field work to develop potential constituents of interest data in advance of the completion of the screening level HHRA and ecological risk assessment for Midland and, as a result, the overall schedule was also modified to reflect the need to collect this information.
- The footnote "Field work will commence when the Alternative Site-Specific Direct Contact number has been approved by MDEQ" was modified to read "Field work will commence when the alternative site-specific direct contact criteria have been approved by the MDEQ or alternative cleanup criteria are approved with modifications by the MDEQ."

These approved Compliance Schedules are components of the December 1, 2006, RIWP and, as such, become enforceable in accordance with the conditions of Dow's License. Failure to undertake the actions or responses required by this letter and enclosed approved Compliance Schedules may result in the issuance of a Notice of Violation by the MDEQ. Dow may propose, with adequate justification, revisions to these Compliance Schedules at the time the revised RIWPs are submitted later this year. Revisions to the enclosed Compliance Schedules will require formal approval by the MDEQ.

Should you have questions regarding this approval, please contact Mr. Allan Taylor, Hazardous Waste Section (HWS), Waste and Hazardous Materials Division, at 517-335-4799 or by e-mail at taylorab@michigan.gov; or you may contact Ms. De Montgomery, Acting Chief, HWS, at 517-373-7973 or by e-mail at montgomd@michigan.gov; or you may contact me.

Sincerely,



George W. Bruchmann, Chief
Waste and Hazardous Materials Division
517-373-9523

Enclosure

cc/enc: Mr. Ben Baker, Dow
Mr. David Gustafson, Dow
Mr. Peter Wright, Dow
Mr. Joseph Heimbuch, de maximis, inc.
Ms. Margaret M. Guerriero, U.S. EPA
Mr. Gerald Phillips, U.S. EPA
Mr. Greg Rudloff, U.S. EPA
Mr. John Steketee, U.S. EPA
Dr. Lisa Williams, U.S. Fish and Wildlife Service
Mr. Jim Sygo, Deputy Director, MDEQ
Mr. Frank J. Ruswick, Jr., Special Assistant to the Director, MDEQ
Ms. De Montgomery, MDEQ
Mr. Steve Buda, MDEQ
Mr. Terry Walkington/Ms. Trisha Peters, MDEQ
Ms. Virginia Himich, MDEQ
Ms. Cheryl Howe, MDEQ
Dr. Deb MacKenzie-Taylor, MDEQ
Mr. Arthur Ostaszewski, MDEQ
Mr. Allan Taylor, MDEQ
Off-Site Corrective Action File

**COMPLIANCE SCHEDULE
REMEDIAL INVESTIGATION WORK PLAN
TITTABAWASSEE RIVER AND FLOODPLAIN SOILS**

The Dow Chemical Company

Approved by Michigan Department of Environmental Quality

July 24, 2007

TASK	DUE DATE
Overall RIWP	
• Revised RIWP that Addresses MDEQ/Dow Working Meeting Comments	9/17/07
• Fully Revised RIWP that Addresses "Placeholders"	12/1/07
Site Characterization	
• Complete Upper Tittabawassee River In-channel Sampling and Middle Tittabawassee River In-channel and Overbank Sampling	11/15/07
<i>Exposure Unit Sampling and Validation</i>	
○ Process/Time Line to Validate Exposure Unit Concentrations for Priority 1 and 2 Properties	8/3/07
○ Propose Priority 1 and 2 Properties for Exposure Unit Sampling for MDEQ Review and Approval	9/17/07
○ Work Plan for Exposure Unit Sampling Submittal to MDEQ for Review and Approval	10/15/07
○ Complete Exposure Unit Sampling for Priority 1 and 2 Properties	11/15/07
<i>Geophysics</i>	
○ Geophysics Calibration Response	8/3/07
○ Geophysics Calibration Complete and Submitted to MDEQ for Review and Approval	8/31/07
<i>Geochemistry</i>	
○ Second Phase Geochemistry Report per 7/12/07 MDEQ Letter	8/31/07
<i>Secondary Constituents of Interest</i>	
○ Identification of Secondary Constituents of Interest for Fish and Wild Game Sampling Plans and Screening Level Human Health and Ecological Risk Assessments (Based on Available Information)	10/1/07
• Middle Tittabawassee River Characterization Report	3/1/08
• Lower Tittabawassee River Characterization Report	3/1/09
○ Complete Lower Tittabawassee River In-channel Sampling and Any Remaining Middle Tittabawassee River In-channel and Overbank Sampling	11/15/08

TASK	DUE DATE
Interim Response Activities	
<ul style="list-style-type: none"> Commence Interim Response Activities Pursuant to IRA/PCAP Implementation Decision Tree (4/30/07) 	Within 10 Days of Receipt of Analytical Data in Excess of Trigger Levels
Human Health Risk Assessment	
<ul style="list-style-type: none"> Fish Sampling Analytical Report 	12/15/07
<ul style="list-style-type: none"> Wild Game Analytical Report 	12/15/07
<ul style="list-style-type: none"> Screening Level Risk Assessment for Upper Tittabawassee River 	3/1/08
<ul style="list-style-type: none"> Screening Level Risk Assessment for Middle Tittabawassee River 	8/1/08
<ul style="list-style-type: none"> Screening Level Risk Assessment for Lower Tittabawassee River 	3/1/09
<ul style="list-style-type: none"> Probabilistic Risk Assessment for Tittabawassee River, Unless Alternate Methodology and/or Time Line are Deemed Necessary by MDEQ 	8/1/09
<ul style="list-style-type: none"> Scientific Advisory Panel Recommendations on Site-Specific Direct Contact Criteria 	12/31/09
<ul style="list-style-type: none"> Risk Management Decision to Develop Site-Specific Cleanup Criteria (i.e., human health, ecological) 	2/15/10
Ecological Risk Assessment	
<ul style="list-style-type: none"> Screening Level Ecological Risk Assessment for Upper Tittabawassee River 	3/1/08
<ul style="list-style-type: none"> Screening Level Ecological Risk Assessment for Middle Tittabawassee River 	8/1/08
<ul style="list-style-type: none"> Screening Level Ecological Risk Assessment for Lower Tittabawassee River 	3/1/09
<ul style="list-style-type: none"> Baseline Ecological Risk Assessment for Tittabawassee River, Unless Alternate Methodology and/or Time Line are Deemed Necessary by MDEQ 	8/1/09

**COMPLIANCE SCHEDULE
REMEDIAL INVESTIGATION WORK PLAN
MIDLAND AREA SOILS**

The Dow Chemical Company

Approved by Michigan Department of Environmental Quality

July 24, 2007

TASK	DUE DATE
Pre-Remedial Investigation Activities	
• Pre-Remedial Investigation Report	(3/22/07)
Overall RIWP	
• Fully Revised RIWP that Addresses "Placeholders"	12/1/07
Phase I Remedial Investigation	
• Site-Specific Direct Contact Criteria Report	10/1/07
• Scientific Advisory Panel Recommendations on Site-Specific Direct Contact Criteria	
• "Unblinding" of Pre-Remedial Investigation Data	3/1/08
• Field Work to Develop Additional PCOI Data	See *
• Screening Level Human Health Risk Assessment for Midland for All PCOIs	9/1/08
• Human Health Probabilistic Risk Assessment for Midland, Unless Alternate Methodology and/or Time Line are Deemed Necessary by MDEQ	12/31/08
• Screening Level Ecological Risk Assessment for Midland	9/1/08
• Baseline Ecological Risk Assessment	If Necessary
• Independent Scientific Advisory Panel Recommendations	If Necessary
• Risk Management Decision to Develop Site-Specific Cleanup Criteria (i.e., human health, ecological)	3/1/09

*Field work will commence when the alternative site-specific direct contact criteria have been approved by the MDEQ or alternative cleanup criteria are approved with modifications by the MDEQ.